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Performance differences across strategic groups: an examination of financial market-based performance measures

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- *One of the more interesting issues in the strategic management field is the question of whether intra-industry performance differences exist, particularly across strategic groups. Most of the existing studies have used accounting measures of performance despite the documented weaknesses of such measures. This paper examines whether financial market-based measures of performance are superior to accounting-based measures in identifying performance differences across strategic groups.*
- *Hypotheses are tested on data from an existing sample of firms in the US pharmaceutical industry. The empirical results indicate that performance differences are more likely to exist across strategic groups when financial market performance measures are used. Suggestions for further refinements are made and limitations of the study are discussed.*

Introduction

The concept of strategic groups was introduced by Hunt (1972) to explain intra-industry performance differences. Strategic groups are groups of firms within an industry following similar strategies in terms of such key decision variables as scope and resource deployment (McGee and Thomas, 1986; Porter, 1979) and in theory, performance differences are hypothesized to exist across strategic groups (Caves and Porter, 1977; Ketchen *et al.*, 1997; McGee and Thomas, 1986; Porter, 1979; Thomas and Venkatraman, 1988). However, a lack of conclusive empirical support for the relationship between group membership and performance may cast doubt on the very foundations of the theory underlying strategic groups (Barney and

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Hoskisson, 1990; Dranove *et al.*, 1998; Hatten and Hatten, 1987; Tang and Thomas, 1992).

A number of general explanations have been advanced to explain the mixed results in empirical studies. The varied research designs and methodologies employed attract the most critical comments. More specifically, Ketchen *et al.* (1997), in a meta-analysis of 40 empirical investigations published between 1992 and 1995, identified three characteristics of the studies that found stronger relationships between group membership and performance, i.e., broad definitions of groups, single-industry samples and longitudinal designs. The inconclusive results of earlier studies may also have been influenced by the inappropriate choice of clustering methods to form strategic groups. More recently, Ferguson *et al.* (2000) and Nair and Kotha (2001) proposed improved ways of forming groups and reported significant performance differences across groups. Newer research has also embraced richer concepts of firm resources over time, including dynamic capabilities (Teece *et al.*, 1997) and there have been a number of studies examining performance differences among groups (Osborne *et al.*, 2001; Lee *et al.*, 2002; Athanassopoulos, 2003; Zuniga-Vicente *et al.*, 2004). In addition, more attention has been paid to the effects of industry-specific and firm-specific assets on differences in firm performance across strategic groups (Nair and Kotha, 2001; Hawawini *et al.*, 2004).

However, this paper focuses attention on the predominant use of accounting-based measures of performance rather than financial market measures of performance to address intra-industry performance differences. Existing studies tend to use the accounting-based measures of performance, such as return on assets (ROA) and return on equity (ROE). The only exception is the very recent study by Hawawini *et al.* (2004), which used both accounting-based and value-based measures. Accounting measures of performance exhibit several weaknesses in practice, including the scope for managerial discretion in adjusting accounting numbers, a short-term measurement bias and their limitations in the valuation of intangible resources and capabilities (Barney, 2002).

This paper attempts to discover whether financial market measures of performance are superior to accounting measures in identifying performance differences across strategic groups. The questions are examined through an in-depth longitudinal analysis of data drawn from a single-industry sample — the US pharmaceutical industry — which was verified in earlier studies (Bogner *et al.*, 1994, 1996) but which had used accounting measures of performance exclusively. This sample was chosen so that the results from earlier work could be re-evaluated, not only with improved methods but also with evidence from the use of financial market-based constructs for measuring firm performance.

The paper is structured as follows. First, a brief review of empirical studies examining the impact of strategic group membership on performance is presented. Second, the research methodology is presented and the findings are discussed. Finally, the implications of the results and the conclusions and limitations of the study are reviewed.

Literature review: Performance differences across strategic groups

As noted above, Hunt (1972) proposed the theoretical term *strategic groups* to identify groups of firms within an industry context following similar strategies across key variables and argued that performance differences should exist across strategic groups as a consequence of different resource endowments. Since then, there have been many studies having both a theoretical and an empirical focus. The key empirical studies are examined here, investigating the relationship between strategic groups and firm performance — one of the central topics in the research dedicated to this subject (McGee and Thomas, 1986; Cool and Schendel, 1987; Thomas and Venkatraman, 1988). Theoretically, it has been pointed out that performance differences exist between strategic groups (Caves and Porter,

1977; McGee and Thomas, 1986; Tang and Thomas, 1992; Thomas and Venkatraman, 1988). However, empirical evidence has been mixed (e.g., Lawless *et al.*, 1989; Mascarenhas and Aaker, 1989; Fiegenbaum and Thomas, 1990; Cool and Dierickx, 1993). Some studies have found performance differences across groups (e.g., Dess and Davis, 1984; Oster, 1982), while others found no differences in performance (cf. Cool and Schendel, 1987, 1988; Frazier and Howell, 1983).

In a recent study, Ketchen *et al.* (1997) examined 40 empirical investigations of the relationship between group membership and performance and found that membership does partially explain performance differences. Moreover, they indicated that studies involving broader group configurations, single-industry samples and longitudinal designs are more likely to find a significant relationship. In addition, it is important to note that many earlier studies were criticized for the methodologies employed in clustering groups, which might also explain some of the non-significant results. Recent research, e.g., Ferguson *et al.* (2000), Nair and Kotha (2001) and Zuniga-Vicente *et al.* (2004), using improved methods for forming strategic groups, has provided more convincing evidence of performance differences.

In addition, few of the existing empirical studies examine the relationship between strategic group membership and performance from a dynamic viewpoint. Teece *et al.* (1997) identified that dynamic capabilities are a source of sustainable advantage in times of rapid change. However, in the empirical studies of strategic groups, dynamic capabilities have only recently been taken into account (Lee *et al.*, 2002; Athanassopoulos, 2003; Zuniga-Vicente *et al.*, 2004). Lee *et al.* (2002) develop a simulation model to examine conditions under which strategic groups emerge and their performance differences persist. They find that dynamic capability is one of the important factors in understanding the emergence and stability of strategic groups. In a panel data analysis of the grocery industry in the UK, Athanassopoulos (2003) reported a gradual performance decline of the industry across the time frame. Zuniga-Vicente *et al.* (2004) employed a new grouping technique to examine how the relationship between performance and strategic groups varies over time. They found that significant performance differences among strategic groups existed in some years but not in others.

Earlier studies also generally failed to consider the effects of firm and industry characteristics when examining the performance differences across groups. Fiegenbaum and Thomas (1995) sought to advance the research on strategic groups by shifting attention from industry-specific to firm-specific effects. Dranove *et al.* (1998) asserted that a strategic group exists only if the performance of members is an outcome of group characteristics, after controlling for firm and industry characteristics. Nair and Kotha (2001) found that even after controlling for both environment (industry) and firm-specific effects, group membership was significantly associated with firm performance. Hawawini *et al.* (2004) re-examined the question of whether firms' performance is driven primarily by industry or firm factors and found that a significant proportion of the absolute estimates of the variance of firm factors was due to the presence of a few exceptional firms in any given industry. In other words, only for a few dominant value creators (leaders) and destroyers (losers) do firm-specific assets seem to matter significantly more than industry factors. For most other firms, the industry effect turns out to be more important for performance than firm-specific factors.

Further complicating the debate is the issue of how to measure performance. Indeed, there has been an extensive contribution in the strategic management literature about whether or not performance measures based on accounting data capture firm performance adequately (e.g., Barney, 2002; Chakravarthy, 1986; Lubatkin and Shrieves, 1986). However, it is noteworthy that in virtually all of the reported studies, accounting-based measures have been used to assess performance. It is a reasonable proposition, therefore, that this

Further complicating the debate is the issue of how to measure performance

may also be an important reason for the conflicting results in those studies. It was only in a very recent study by Hawawini *et al.* (2004) that two value-based measures of firm performance were used to test firm performance across strategic groups — that is, economic profit (EP) and total market value (TMV).

Accounting-based measures have been criticized for several reasons. Rappaport (1986) and Doyle (2000) have argued that they are not appropriate performance measures since they ignore both risk and the time-value-of-money, whereas financial market-based measures of performance account for both factors. Market-based measures of performance may be more relevant to strategy research since they capture expectations of future returns from firm performance, as opposed to past outcomes reflected in accounting-based measures (Keats and Hitt, 1988; Palich *et al.*, 2000). In the diversification literature, for example, Keats and Hitt (1988) found a positive relationship between diversification and market performance but no relationship between diversification and accounting performance. Furthermore, Barney (2002) identified three limitations to accounting measures of performance that may have affected the results of studies of the relationship between strategic group membership and performance: (1) managerial discretion, (2) a short-term bias and (3) problems with the valuation of intangible resources and capabilities.

In the first case, managers often have some discretion in choosing accounting methods and therefore may be tempted to increase reported current-period profit to increase bonuses or to satisfy the expectations of the financial market. On the other hand, they may be tempted to decrease reported current-period profit to decrease the threats of potential antitrust liability or to increase bargaining power with external stakeholders. In the second case, because long-term multiple-year investments are usually treated for accounting purposes, as costs in those years where they do not generate revenues that exceed cost, accounting-based measures of performance have a short-term bias. The final limitation of accounting-based measures of performance is that they generally do not fully value a firm's intangible assets. This is particularly problematic in industries, such as the pharmaceutical industry, where intangible assets represent a large portion of a firm's value. The limitations of accounting-based measures of performance, therefore, may explain the lack of performance differences in past strategic group studies.

Lubatkin and Shrieves (1986) showed that financial market performance measures do not have such limitations. In a study of 160 firms, Hoskisson *et al.* (1993) found that the correlation among three financial market measures of performance ranged from 0.84 to 0.90. However, the correlation between these three measures and two accounting measures of performance was much lower, ranging from 0.15 to 0.30. These results indicate that the financial market measures of performance provide information about performance over and above simple accounting measures of performance.

In summary, therefore, it is valuable to examine whether the use of market performance measures will help to clarify the relationship between strategic group membership and performance. Here we focus on the relationship between the strategic group membership of the US pharmaceutical firms (whose dynamic capabilities in R&D and intangible assets evolve over time) and their financial market performance. We also investigate whether performance is more likely to differ significantly across strategic groups when financial market performance measures are used. Hence, the following two hypotheses are formulated:

Hypothesis 1: Financial market performance differs across strategic groups.

Hypothesis 2: Financial market performance measures provide greater support for inter-group performance differences than accounting-based measures.

Methodology

In the spirit of developing cumulative results and reinforcing or amending results from earlier research, this study is built upon the data and analyses of the US pharmaceutical industry originally carried out by Bogner (1991) and Bogner *et al.* (1994, 1996). The data set consists of 36 firms from the USA and Western Europe that competed in the US pharmaceutical market during the 20-year period 1969–1988.[1] The pharmaceutical sector is an appropriate competitive environment in which to conduct this study, given its dynamic character and inimitable, firm-specific resources (McGee, 2003). In this industry the pattern and periodicity of the groups is particularly well supported from the underlying economic and legal background and is therefore reasonably clear of noise. In the original studies (Bogner, 1991; Bogner *et al.*, 1994, 1996), seven variables were used to reflect two key competitive resources in the industry: namely, the firm's product line profile (four variables) and its research competence (three variables).[2] Five stable strategic time periods (SSTP), covering 1969–1988, were also identified using the well-accepted Fiegenbaum *et al.* (1987, 1990) SSTP methodology. Firms were then clustered for each SSTP using Ward's minimum variance algorithm (Fiegenbaum, 1987). This study parallels the framework set up in these original studies and identifies membership of each strategic group across the stable strategic time periods, as shown in **Table 1**. Each grouping contains a label that generally describes the strategic profile of the members at that time.

Financial market performance data was obtained from that collected by the Center for Research on Security Prices (CRSP) at the University of Chicago and accounting data was sourced from Standard and Poor's COMPUSTAT database. Accounting performance is measured by return on assets (ROA) (net income/total assets (gross)) and return on invested capital (ROIC) (net income/invested capital). ROA and ROIC were selected because most prior research on performance differences has used these measures of profitability. Cumulative returns (CRET) and cumulative beta excess returns (CBRET) are used to measure financial market performance. CRET measures the value created during each of the SSTP and CBRET measures the value created during each of the SSTP in excess of the value expected for a firm with a similar risk profile. CRET measures are highly sensitive to the choice of period starting and ending dates and that is why we also use CBRET, which is less sensitive.

The CRSP daily data file provides data on daily returns and daily beta excess returns. Daily returns are calculated on the basis of the difference between the current day's closing price ($P_{c,(t)}$) and the previous day's closing price ($P_{c,(t-1)}$). That is,

$$R_t = \frac{P_{c,(t)} - P_{c,(t-1)}}{P_{c,(t-1)}}$$

Cumulative returns are the sum of daily returns over the period concerned:

$$\text{CRET}_{(t,t+n)} = \Sigma_{i=t}^{t+n} R_i$$

Daily beta excess returns to compute CBRET are also available in the CRSP daily file and are estimated by the following procedure. Each stock in the database is assigned to a portfolio based on its beta (the systematic risk). That is, each alternative portfolio has stocks with the

[1] The data set chosen is a rich database involving careful choice of variables to reflect scope choices (e.g., therapeutic product lines such as cardiovascular, cancer, etc.) and resource deployments reflecting research competence (a critically important competitive asset in this industry). Its richness and coverage of the industry should allow thorough and cumulative testing of the performance consequences of groups in this industry.

[2] The variables chosen are identified at the base of Table 1. In particular, ARD, HRD and RRD measure the firm's research competence in terms of R&D. Product line profile is addressed through the variables HOSP, CHRN, HMK and RELPROD, reflecting market (e.g., hospital) and therapeutic class choices.

Table 1. Strategic groups in the US pharmaceutical market

–1969	**Group One** Medium size limited research	**Group Two** Medium size moderate research	**Group Three** Broad organic chemistry focus	**Group Four** Early diversification pursuit	
	Beecham Bolar ICN Marion Labs Merrell Mylan Norwich-Eaton Rorer Zenith	Abbott Labs Bristol-Myers Burroughs-Wellcome Eli Lilly Johnson & Johnson Parke-Davis Robins (A.H.) Schering-Plough Sterling Squibb	American Home Products American Cyanamid Hoffmann-LaRoche Imperial Chemical Merck Searle (G.D.) Smith Kline & French Syntex Upjohn	Pfizer	
1970–1977	**Group One** Medium size limited research	**Group Two** Traditionally antibiotics	**Group Three** Broad organic chemistry focus	**Group Four** Generic-like firms	
	Beecham Boots Bristol-Myers Burroughs-Wellcome ICN Rorer Robins (A.H.) Johnson & Johnson Schering-Plough	Abbott American Cyanamid American Home Products Eli Lilly Squibb Warner-Lambert	Ciba-Geigy Hoechst Hoffman-LaRoche Imperial Chemical Merck Pfizer Sandoz Searle (G.D.) Smith Kline & French Sterling Syntex	Barr Bolar Marion Labs Merrell Mylan Norwich-Eaton Par Zenith	
1978–1980	**Group One** Medium size limited research	**Group Two** Traditionally antibiotics	**Group Three** Broad organic chemistry focus	**Group Four** Generic-like firms	**Group Five** Heavy patenters
	Burroughs-Wellcome Glaxo Johnson & Johnson Robins (A.H.) Rorer Schering-Plough Searle (G.D.) Syntex	American Home Product Beecham Bristol-Myers Eli Lilly Pfizer Smith Kline & French Squibb Warner-Lambert	Ciba-Geigy Hoechst Hoffmann-LaRoche Imperial Chemical Merck Sandoz Sterling Upjohn	Barr Bolar Boots ICN Marion Labs Merrell Mylan Norwich-Eaton Par Zenith	Abbott Labs American Cyanamid
1981–1984	**Group One** Lagging research firms	**Group Two** Medium size assertive research	**Group Three** Large size assertive research	**Group Four** Generic firms	**Group Five** Diagnostic thrust
	Boots ICN Marion Labs Merrell Mylan Norwich-Eaton Rorer	American Home Products Bristol-Myers Burroughs-Wellcome Glaxo Johnson & Johnson Robins (A.H.) Schering-Plough Searle (G.D.) Smith Kline & French Syntex Warner-Lambert	American Cyanamid Beecham Cuba-Geigy Eli Lilly Hoechst Hoffmann-LaRoche Imperial Chemical Merck Pfizer Sandoz Squibb Sterling Upjohn	Barr Bolar Par Zenith	Abbott Labs
1985–	**Group One** Lagging research firms	**Group Two** Narrow focus research firms	**Group Three** Broad focus research firms	**Group Four** Generic firms	**Group Five** Diagnostic thrust
	Boots ICN Marion Labs	Burroughs-Wellcome Glaxo Johnson & Johnson Merrell Dow Norwich-Eaton Robins (A.H.) Rorer Sterling	American Cyanamid American Home Products Beecham Bristol-Myers Ciba-Geigy Eli Lilly Hoechst Hoffmann-LaRoche	Barr Bolar Mylan Par Zenith	Abbott Labs

Table 1. *Continued*

	Imperial Chemical
	Merck
	Pfizer
	Sandoz
	Schering-Plough
	Searle (G.D.)
	SmithKline Beecham
	Squibb
	Syntex
	Upjohn
	Warner-Lambert

Significant variables in clustering (*F* statistic)

Variables	Periods				
	-1969[1]	1970–1977[2]	1978–1980[3]	1981–1984[3]	1985–[3]
ARD	72.71***	114.53***	159.23***	82.26***	45.44***
RRD	7.58**	49.54***	31.81***	0.02	9.07***
HRD	3.33**	0.32	1.90	0.88	3.08**
HOSP	1.88	3.94**	4.51***	5.90***	8.44**
CHRN	0.85	1.93	0.50	1.63	10.58***
HMK	4.75***	1.37	3.52**	0.12	4.18**
RELPROD	18.87***	13.51***	21.58***	14.65***	44.07***

ARD = 1-year absolute level of R&D, RRD = 7-year relative level of R&D, HRD = concentration of R&D by research class in each year for each firm, HOSP = portion of product line directed towards hospital market, CHRN = portion of product line directed towards chronic care market, HMK = concentration of drugs by therapeutic classes in each year for each firm, RELPROD = firm's new products as a percentage of industry total.
***$p < 0.01$; **$p < 0.05$; [1]29 d.f.; [2]34 d.f.; [3]35 d.f.

same beta. Portfolio returns are estimated daily and the difference between the daily returns of a stock and the daily portfolio returns are the beta excess returns. That is,

$$XR_{\beta,t} = R_t - R_{\beta,t}$$

where $XR_{\beta,t}$ are the daily beta excess returns and $R_{\beta,t}$ are the returns to the same beta portfolio. Cumulative beta excess returns are the sum of daily beta excess returns over the period examined:

$$\text{CBRET}_{(t,t+n)} = \Sigma_{i=t}^{t+n} XR_{\beta i}$$

where $\text{CBRET}_{(t,t+n)}$ are the cumulative beta excess returns and $XR_{\beta i}$ are the daily beta excess returns. This measure has been used in other studies in strategic management (e.g., Nayyar, 1993).

Many researchers in finance have argued that a firm's financial market value and risk level are influenced by its capital structure (e.g., Jensen and Meckling, 1976). Therefore, we use the debt-to-equity ratio (long-term debt/equity) to assess the effects of financial leverage. Debt-to-equity was chosen over other measures of leverage or gearing (e.g., debt/total assets) because it is unaffected by changes in working capital and other liabilities (Gibbs, 1993).

Analyses of covariance (ANCOVA) are used to test the first hypothesis, namely that financial market performance differs across strategic groups and these analyses are carried out for each stable strategic time period. The second hypothesis is tested using a two-tailed test for difference between proportions.

Findings

The results of the ANCOVA analyses are presented in **Table 2**. The cumulative returns (CRET) are found to be significantly different across strategic groups for the last two periods (covering the period from 1981 to 1988) while they are not significantly different for the first three periods (covering the period from 1969 to 1980). Table 2 also shows that beta excess returns (CBRET) differ significantly across

Table 2. Results of ANCOVA (*F* statistic)

Periods: Dependent variables	Independent variables	–1969[1] (SSTP 1)	1970–1977[2] (SSTP 2)	1978–1980[3] (SSTP 3)	1981–1984[3] (SSTP 4)	1985–[3] (SSTP 5)
CRET	Strategic group	2.51	0.49	0.19	5.48**	3.39*
	Debt/equity ratio	1.26	1.71	0.10	3.57*	10.09**
CBRET	Strategic group	4.53**	0.13	0.06	4.46**	10.12***
	Debt/equity ratio	1.03	1.17	0.58	2.46	17.94***
ROA	Strategic group	1.01	0.53	0.60	0.84	8.53***
	Debt/equity ratio	17.68***	28.87***	24.38***	3.41*	10.83***
ROIC	Strategic group	0.80	0.52	0.49	1.91	3.94**
	Debt/equity ratio	14.53***	99.93***	21.33***	19.17***	7.65**

***$p < 0.01$; **$p < 0.05$; *$p < 0.10$.
Number of observations for accounting data-based performance analyses: [1]18; [2]21; [3]17.
Number of observations for financial market data-based performance analyses: [1]15; [2]17; [3]13.

strategic groups for three periods — the first period and the last two periods covering 1981–1988 — but there is no significant difference observed for the other two periods covering the period 1970–1980. To compare the roles of financial market measures and accounting measures in identifying group performance differences, we also report the results of ANCOVA using accounting measures (ROA and ROIC) in this table. The results indicate that performance differences across groups using ROA and ROIC are not found to be significant except for the last period, which is from 1985 to 1988.

A significance test for a difference in proportions is used to see if financial market measures are better than accounting-based measures in identifying performance differences across strategic groups. The result of the test returns a *p*-value of 0.064, i.e., clearly significant at the 10% level, which is acceptable given that we only have five SSTP in the data set. Based on this finding we conclude that the use of financial market measures provides better support for inter-group performance differences than the use of accounting-based measures of performance.

The lack of a similar relationship for accounting measures can be explained by the fact that financial leverage (debt/equity) was an important strategic variable over the entire period for all firms. Accounting measures (ROA and ROIC) are highly correlated with leverage/gearing, since the higher the debt/equity ratio the higher the interest expense and the lower the net income, the numerator in both the formula for ROA and ROIC. Comparatively, financial market performance is much less correlated with firm-level financial variables (Hoskisson *et al.*, 1993).

Discussion of the results

On examining the time periods when performance measured by financial market data did not differ across strategic groups (i.e., 1970–1980), it was observed that the mean beta excess returns across all groups was negative. That observation can be interpreted to indicate that the period 1970–80 was probably the worst decade for firm returns in the pharmaceutical industry as a whole compared with firms of similar risk in other industries. The financial market valued these firms and their strategies much below firms of similar risk levels. It should be noted (Bogner, 1992) that in the 1960s, pharmaceutical firms were suffering from a marked absence of new product developments, new drug approvals and new chemical entities, which therefore weakened their cash flow and profitability profile in the 1970s, given the large time lags — typically 10 to 15 years — that exist between product development and the establishment of a firm's stable drug product profile in the ethical sector of the industry. In addition, the presence of a strengthening dollar over that period hurt profit repatriations from

the overseas subsidiaries of these predominantly multinational firms. Furthermore, during this decade the mean cumulative returns were positive across all but two strategic groups, indicating that most of these firms' stocks gained value but not as much as for similar beta firms. Mean cumulative returns for the strategic groups varied from −0.32 to 0.30 during SSTP 2 and from 0.22 to 0.96 during SSTP 3. There was a differential gain in shareholder value across strategic groups but taking into account intra-group variance, these differences were not statistically significant. Mean beta excess returns varied from −0.72 to −0.63 during SSTP 2 and from −0.47 to −0.26 during SSTP 3. Although there were differences across the groups, these differences were not statistically significant. These findings warrant examination of the gain in shareholder value of each firm and such an examination should provide more insight into the presence of possible outliers that caused the lack of significance in the statistical analysis — or, alternatively, focus analysis on the distinctive resources possessed by each individual firm and the success of individual drug firms (e.g., Pfizer, Merck) in producing new drugs and product profitability.

There are some other interesting observations. From SSTP 3 on (i.e., from 1978 to 1985), all strategic groups have positive mean cumulative returns but not all the mean beta excess return measures were positive. This means that from 1978 through to 1985 all firms gained in value but the gain was on average lower than for similar beta firms. In SSTP 5, the mean cumulative returns ranged from 0.15 to 0.55 and the mean beta excess returns ranged from −0.15 to 0.30. Equally importantly, the analysis of variance found significant differences across strategic groups once the effect of financial leverage is controlled for in both measures. Further, mean cumulative returns and mean beta excess returns are highly correlated during this period, as can be seen in Table 2 by noticing that the strategic group with the lowest mean cumulative returns also has the lowest mean beta excess return, and so on.

Another interesting observation is that the difference in accounting performance across strategic groups (for example, only for the 1985–8 SSTP) is probably explained by the strong differences in financial leverage across the groups.

Conclusion

This research finds that performance differences exist across strategic groups more frequently with financial market rather than accounting-based measures of performance. The results of ANCOVA show that significant performance differences are identified across strategic groups for three of the five SSTP, using financial market measures (CBRET). Indeed, in the two cases where non-significant results were obtained (i.e., for the 1970–1980 time period), we reported that the adverse economic and strategic conditions present in the pharmaceutical industry over that period created relatively low profitability and homogeneity in the average company's strategic profile.

We believe that the continued use of better constructs, particularly for financial market-based performance measures, should enable competitive strategy researchers to identify stronger relationships between strategic group membership and financial performance. Further, this study adds to the findings of the carefully researched Bogner *et al.* (1996) work of the industry, by linking group membership more clearly to performance through the use of improved, modern financial market-based measures of performance.

We suggest that the results of this study, along with more positive evidence of performance differences in recent studies (e.g., Nair and Kotha, 2001), provides a rationale for re-examining the performance consequences of strategic group membership using not only improved financial market-based performance constructs but also improved methods for forming groups (e.g., Zuniga-Vicente *et al.*, 2004). Indeed, industries and databases previously studied, such as retailing (Athanassoupoulos, 2003), insurance (Fiegenbaum and

Thomas, 1990, 1995) and steel (Nair and Kotha, 2001), should be the subjects of enquiry with the aim of establishing a more consistent and cumulative stream of evidence to support or refute the relationship between strategic group membership and performance. Thus, the competing claims of theories of competitive strategy, such as the so-called 'strategy/conduct/performance' paradigm (Porter, 1979), or the resource-based view (Wernerfelt, 1984), to provide explanations of intra-industry performance differences can be systematically examined and, in turn, lead to further theory building for the long-term theoretical growth of the field of strategic management.

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